

how second-hand smoke harms and kills non-smokers

Second-hand smoke is a complex mix of thousands of chemicals. At least 40 substances in second-hand smoke have been shown to cause cancer. Tobacco smoke also contains large quantities of carbon monoxide, a gas that inhibits the blood's ability to carry oxygen to body tissues including vital organs such as the heart and brain, as well as other substances that contribute to heart disease and stroke.

According to a 1997 report of the California Environmental Protection Agency, the estimated annual tobacco-induced death rates among non-smokers in California range from 147 to 251 people per million inhabitants. If the same rate applied in the European Union, this would work out to an annual toll of 55,000 to 94,000 victims of second-hand smoke. In China, the same rate would result in a staggering death toll of 185,000 to 317,000.

Exposure to second-hand smoke can cause both long-term and immediate effects on human health. Immediate effects include irritation of the eyes, nose, throat and lungs. Nonsmokers, who are generally more sensitive to the toxic effects of tobacco smoke than smokers, may experience headaches, nausea, and dizziness. Second-hand smoke places extra stress on the heart and affects the body's ability to take in and use oxygen. The long-term health impact of second-hand smoke is increased cancer and heart disease rates after years of exposure. For asthma sufferers, however, tobacco smoke can cause immediate danger by triggering attacks. The majority of asthma sufferers report symptoms ranging from discomfort to acute distress from exposure to second-hand smoke.

second-hand smoke and children

Children's vulnerability to second-hand smoke is a particular concern, both for medical and ethical reasons. Children's lungs are smaller and their immune systems are less developed—which make them more likely to develop respiratory and ear infections triggered by second-hand smoke. Because they are smaller and breathe faster than adults, they breathe in more harmful chemicals per pound of their weight than an adult would in the same amount of time. Finally, children simply have less choice than adults. They are less likely to be able to leave a smoke-filled room if they want to: infants cannot ask, some children may not feel comfortable asking, and others may not be allowed to leave if they do ask.¹

Extensive studies of the health effects of second-hand smoke on children found the following:

- Exposure to tobacco smoke causes an increase in bronchitis, pneumonia and other respiratory illnesses.
- It causes both acute and chronic middle-ear infections. In 1997, the California Environmental Protection Agency estimated that this effect alone accounted for 0.7 to 1.6 million visits to doctors per year across the United States.² A 1996 study suggested that 13% of ear infections in the United States were caused by tobacco.³
- It triggers asthma attacks in children who already have asthma and some authorities have concluded that it actually induces asthma in healthy children: in 1992, the U.S. Environmental Protection Agency estimated that every year, second-hand smoke exposure resulted in 8,000 to 26,000 new cases of asthma amongst children.⁴

¹ Canadian Health Network, www.canadian-health-network.ca.

² Office of Environmental Health Hazard Assessment of the California Environmental Protection Agency, *Health Effects of Exposure to Environmental Tobacco Smoke*, 1997. http://www.oehha.org/air/environmental_tobacco/finalets.html.

³ DiFranza J and Lew R, "Morbidity and Mortality in Children Associated with the Use of Tobacco Products by Other People," *Paediatrics*, 1996; 97:560-568.

⁴ U.S. Environmental Protection Agency (U.S. EPA, 1992). *Respiratory Health Effects of Passive Smoking: Lung Cancer and Other Disorders*. U.S. EPA Publication No. EPA/600/6-90/006F.



- Exposure to second-hand smoke very substantially increases the risk of Sudden Infant Death Syndrome (SIDS), also known as crib or cot death. This may be due to *in utero* exposure to tobacco smoke or exposure to second-hand smoke as infants. A WHO panel of international experts in 1999 concluded that maternal smoking causes one-third to one-half of SIDS cases.⁵
- Smoking by pregnant women and exposure of non-smoking pregnant women to tobacco smoke reduces the average birth weight of their babies. Babies with low birth weight may face an increased risk of developing medical problems and learning disabilities.

second-hand smoke in the workplace

Second-hand smoke also poses a threat in the workplace. Toxins and carcinogens spread quickly throughout offices, hotels, restaurants and other indoor places of work. Most workers are not in a position to change their work environment or leave their jobs to protect their health. In many cases, where smoke-free workplaces are not guaranteed, employees find themselves obliged to spend the majority of their waking hours in a health-threatening situation. In the case of a restaurant employee, the table below shows a selection of chemicals he or she would inhale directly in a 300m² area during one 8-hour shift!⁶

<i>chemical</i>	<i>amount (ug)</i>	<i>chemical</i>	<i>amount (ug)</i>
carbon monoxide	5606	benzo[a]pyrene	18
tar	3128	propionaldehyde	17
nicotine	678	resols	15
acetaldehyde	207	hydrogen cyanide	14
nitric oxide	190	styrene	13
isoprene	151	butyraldehyde	12
resorcinol	123	acrylonitrile	11
acetone	121	crotonaldehyde	10
toluene	66	cadmium	9.7
formaldehyde	54	1-aminonaphthalene	8.5
phenol	44	chromium	7.1
acrolein	40	lead	6.0
benzene	36	2-aminonaphtalene	5.2
pyridine	33	nickel	4.2
1,3-butadiene	25	3-aminobiphenyl	2.4
hydroquinone	24	4-aminobiphenyl	1.4
methyl ethyl ketone	23	quinoline	1.3
catechol	22		

The chemicals in bold are known carcinogens. Among this list are irritants, mutagens, toxins, and substances that increase blood pressure, promote tumors, effect the central nervous system, damage lungs and cause kidney malfunction.

Whether it is at home, at work, at school, in restaurants, theatres or bars—second-hand smoke is a proven health threat to the young and old, from all walks of life, in all countries.

⁵ Consultation Report, *International Consultation on Environmental Tobacco Smoke (ETS) and Child Health*, 11-14 January 1999, Geneva. Available on-line at <http://tobacco.who.int/en/health/papers/ets-report.pdf>.

⁶ These calculations assume only 10 smokers per 300m² each smoking 2 cigarettes per hour and take into account standard ventilation rates. Courtesy of Physicians for a Smoke-Free Canada. More information available at <http://www.smoke-free.ca/factsheets/Chemicals.htm>.

